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ABSTRACT

This paper outlines the potential contributions and limitations of applying the life-span perspective of developmental psychology to childhood education. The long-range consequences of corrective, preventive, or optimizing endeavors are pointed out. Potential contributions to the establishment of educational goals as well as to the construction of intervention programs are discussed. Limitations concerning the applicability of available research data and developmental theories are reviewed. Emphasis is put on the utilization of research strategies permitting a definite identification of causal factors in intraindividual change. The conclusion of the paper is a plea for the kind of developmental theories that permit short-term estimation of long-term effects. (Author/SB)

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Implications of life-span developmental psychology for childhood education

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Summary

The life-span perspective in developmental psychology has typical implications for education in childhood as well as for intervention in any other age. It points to the late consequences of corrective, preventive, or optimizing endeavours. Its contributions to the establishment of educational goals as well as to the construction of intervention programs are discussed. The limitations concerning the applicability of available research data and developmental theories are reviewed; emphasis is put on the utilization of research strategies permitting a definite identification of causal factors in intraindividual change. The conclusion of the paper is a plea for the kind of developmental theories that permit short-term estimation of long-term effects.

Implications of life-span developmental psychology for childhood education

BALTES' (1973) formula that behavior is a function of behavioral, organismic, and situational variables in present and earlier periods of life points to a research program in developmental psychology which - with regard to a life-span perspective - does not need to be conceived in a new way. What is new, though, is the extension of the time perspective and the search for influences on behavior within longer-range temporal distances (see BALTES & SCHAIE, 1973).

Under a life-span perspective educational or interventional efforts in childhood should be planned with special attention to long-range consequences, too. This is true for all of the three main types of intervention:

(1) Corrective intervention aimed at behavior that is defined as "problematic" or disturbed. The earlier corrective intervention is used in childhood the more likely it can stop disorders from being prolonged or becoming more severe as well as becoming increasingly resistent towards modification in later years. However, there is still more empirical evidence needed about the child-adult continuity of maladaptation or disorders (see e.g. CLARIZIO, 1969; ROBINS, 1966).

(2) Preventive intervention aimed at controlling or hindering the development of disorders or problem behavior or at promoting those behavioral characteristics which facilitate the modification of disorders possibly showing up in later years. Preventive programs in childhood are often based on the assumption that plasticity in earlier years implies better "investment-payoff-rates" (see COWEN, 1973).

(3) Optimizing intervention meaning the establishment of external conditions and/or internal prerequisites allowing the realisation of certain "developmental goals" as far as they can be formulated and justified. If one agrees with JAHODA (1958) that psychological well-being is more than being free from disorders,

then this type of intervention will gain in importance. It implies, however, the establishment of goals for "optimal human development" as a new big problem.

Until now life-span developmental psychology doesn't offer enough data or empirically validated hypotheses to substantiate intervention programs, yet it does offer viewpoints and questions which are most intriguing and should have consequences for future research. We would like to discuss some of these questions as well as some of the associated theoretical and methodological problems.

Contributions of developmental psychology to the establishment of educational goals

Unless one does not plead for "programmatic developmental models" (see BRANDTSTÄDTER, 1975) developmental psychology as any other empirical science can at the utmost contribute to the derivation of developmental goals from "ultimate goals", the establishment of which is mainly outside the concern of psychology. "Ultimate goals" for human development being rooted in the historical, cultural, religious, anthropological, etc. traditions may lean to one of the following global viewpoints (for an elaborated discussion of these basic types of orientation see RIEGEL, 1973; for their implications on theory construction see REESE & OVERTON, 1970): (a) requirements of a future society and its ecology, e.g. individuals have to be enabled to adapt smoothly to external conditions to come; (b) conceptions and models of the "ideal personality" or "ideal human being" (e.g. the "autonomous nonconformist", the "emancipated woman", the "cultivated man"); (c) conceptions of the "ideal man-environment interaction" (e.g. the "socialistic individual in the socialistic society").

Developmental psychology will not prescribe w h a t the ultimate goals of individuals should be like but it might render a contribution by telling h o w individuals can develop in the direction of any of these "ultimate goals". This may be achieved by deriving "subgoals" from "ultimate goals" via technological transformations of developmental theories and by defining them on different levels of a goal-hierarchy in terms of a "behavioral network", as STUDER (1970) has demonstrated in the area of environmental design.

Socialization goals cannot be derived in the strict sense of the word because of the lack of empirically founded laws. Postulating the implications from ultimate goals is not a process of logical deduction since this requires a logical relationship which actually has to be hypothetically construed first by the assumption of functional or implicative relationships between subgoals and ultimate goals. Therefore, it is rather an act of classification than one of deduction (see MEYER, 1972).

Today we are only in a few cases able to relate subgoals to ultimate goals on the basis of developmental laws. The relationship is hypothesized instead, using arguments of plausibility; let us illustrate this by using the first of the above mentioned viewpoints as an example: (a) neither ecological conditions, nor political organizations, nor occupational requests, nor means and ways of social interaction in a future society can be predicted with reliability, (b) decisions about developmental goals and new behavioral standards as an answer to changing socio-ecological circumstances can be made more easily in the future than today; (c) no authority (person, institution) can be named that could serve as an orientation mark in the future.

The conclusion we have to draw from these considerations is that individuals themselves will have to make decisions on their own developmental goals during their entire lives. Therefore, intervention in childhood has to be guided by one molar goal, that is to prepare individuals for the necessities of continuous decision-making and planning over the whole life-span: the development of characteristics assumed to hinder autonomous planning and rational decision-making (e.g. rigid emotional attitudes or habits, low levels of information processing, uncritical acceptance of authorities, dependence on interaction partners and on external control) has to be prevented. Since there is little known about the stability and changeability of these characteristics within later years, one should try to prevent their establishment in childhood.

Developmental psychology contributes to the establishment of educational goals in still other ways. According to its traditional orientation it focuses upon universal developmental trends during childhood and adolescence and refers to directions being considered "natural" and being turned into an "ideal norm" refer-

ring to a "natural law" (see HOERMANN, 1963). Characteristics conceived as "natural" developmental endpoints or goals are for example formal-logical reasoning, moral autonomy, cognitive complexity, genital sexuality.

Descriptive developmental psychology leads to the formulation of age-specific norms (with regard to specific populations or groups) treated as a valid basis for the evaluation of an actual developmental state and serving as age-specific developmental goals.

Finally, the observation and analysis of developmental processes permits the definition of developmental subgoals or intermediate goals by exhibiting the sequential order and by pointing to various internal prerequisites for further development in different domains.

While traditional developmental psychology of childhood and adolescence would probably argue that the developmental end-product is achieved at the beginning of adulthood, a life-span developmental approach points to processes of change during later years, too, thus challenging cultural "self-evidences" and consensual expectations concerning the changeability of characteristics in adulthood and old age and allowing (by extending the time-perspective of development) the formulation and establishment of new developmental "optima" which might or should be accomplished in later years.

Moreover, since a life-span developmental theory - unlike the traditional approach of childhood and adolescence developmental psychology - focuses not only on universal trends of change but also on individual- and group-specific patterns and rates of change (see NEUGARTEN, 1969), the formulation of developmental goals comes closer to clinical-psychological categories such as individuation, self-actualization, self-acceptance, prevention of disengagement, etc. (see e.g. BRIM, 1968; LOOFT, 1973).

Furthermore the rediscovery of generation differences and secular change does not only allow the establishment of certain developmental goals for different generations but does also point to the possibilities of formulating developmental goals which reduce, maintain, or strengthen generation differences (see e.g. BIRREN & WOODRUFF, 1973; SCHAIE, 1973).

In brief, the outcomes of a discussion over educational goals are depending heavily on the point of view relative to human development. Under a life-span perspective the goals for intervention in early childhood might change dramatically.

Formation of intervention programs

Having discussed possible contributions of life-span developmental psychology to the establishment of educational goals we have to consider what a life-span perspective can offer to the design of intervention programs and their evaluation.

A taxonomic scheme

We would like to introduce a taxonomic scheme as a guide for planning intervention research and practice. Interventional efforts may be classified according to the following viewpoints:

(1) Target areas: persons (socialization agent, socializee); settings (institutions, communities)
(2) Procedures: formal attributes (duration, intensity, frequency, etc.); degree of complexity including the sequential vs. non-sequential order of techniques
(3) Hypothesized relationships between intervention procedure and target behavior: unidirectional vs. interactionistic; deterministic vs. stochastic
(4) Hypothesized moderating conditions: characteristics of persons (age, sex, generation, biography, etc.), characteristics of settings (cultural system, ecological variables, etc.)
(5) Aspects of evaluation: uni- vs. multivariate control of effects or side-effects; short-term vs. long-range control of effects or side-effects

Different research programs derived from this taxonomical scheme require of course different strategies of data-gathering and data-processing (see BUSS, 1974).

Typical life-span perspectives

In trying to plan and evaluate intervention programs under a life-span perspective the following issues have to be considered:

(1) The life-span approach programmatically avoids an isolating consideration of single life-segments. Thus, introducing antecedent variables through an intervention program in early years also implies observing their effects across the whole life-span, that is, their relative influence on consequent variables has to be estimated by repeated measurements at different age-levels. By observing a variation in the relationships between the antecedent and consequent variables across the life-span, inferences can be made with regard to the importance of questions as (a) age and time of introducing the antecedent variable, (b) its duration and intensity, (c) interactions between different antecedent variables introduced at different ages.

(2) Under a life-span perspective the effects of intervention might be shown as a function of the period of time since realization of the program. The effects may be immediate or delayed, permanent or temporary, and they may influence the developmental process in the sense of level changes or slope-changes (see WOHLWILL, 1973).

(3) Finally, life-span developmental psychology points to the interactions between intervention procedures and certain characteristics of the target person, especially generation and age (conceived as an indicator variable).

Problems in transforming empirical knowledge into intervention programs

When seeking empirical knowledge applicable to the construction of intervention programs we can rely on some experimental work especially in the area of cognitive and language development. Aside from this a great deal of research was concerned with the description of intraindividual change by using cross-sectional, longitudinal and mixed designs and with the investigation of the relationships between earlier life-events or organismic variables and the development of certain characteristics in later years (see e.g. BAYLEY, 1964; KAGAN & MOSS, 1962) by using correlational analyses.

With regard to their applicability to the construction of intervention programs the available experimental and correlational

data are of restricted value for different reasons.

Starting with the discussion of correlational methods we have to restate that they do not permit the identification of causal relationships. Since every intervention attempt requires the knowledge about the variables that produce change using valid "if-then"-statements, we first have to put our efforts in the construction of causal models.

The existing correlational data in developmental psychology are based on interindividual variation, a fact that is oftentimes overlooked. We are confronted with a severe problem of generalisation when we try to produce intraindividual change in a target attribute by manipulating the variables correlated to the target attribute on the basis of interindividual differences.

The correlation pattern derived from interindividual variation cannot be assumed to show up when calculated from intraindividual variation. Even if high maternal control, for instance, would be strongly related to obedience in the child, as inferred from interindividual variation, an intraindividual variation in the maternal behavior may not produce the expected effect perhaps on account of the child's interpretations and causal explanations of the change in the maternal behavior (see SCHNEEWIND, 1974).

Furthermore, we cannot rely on the assumption that the change (intraindividual variation) in a target variable can be explained by the same set of predictors as the interindividual variance of the variable. For example, by using hypotheses derived from developmental psychology (e.g. sensitive periods), learning theories (e.g. stabilization of behaviors), and symbolic interactionisms (e.g. preserving identity) we can expect varying resistance toward change. We do not know, however, whether a modification of the variables having predictive value for interindividual variation will produce analoguous intraindividual variation (change).

Finally, we are not sure whether spontaneous and "manipulated" variation do have the same correlates. Even if we had measured spontaneous variation (which, for instance, could be explained by the transactional character of the parent-child-relationship) and if we had defined its correlates, the problem of whether the manipulation of such variations by an intervention program would pro-

duce the same effects would still remain unsolved. The intervention attempt itself may produce side-effects (e.g. divergent evaluations of the former and the new educational behavior; inconsistencies between attitudes and behavior, etc.), which in turn can modify the assumed covariation in an unknown manner.

Until now the applicability of most developmental research to intervention planning is doubtful. To overcome the methodological shortcomings we have to emphasize different research strategies.

As pointed out in the Sixties already by ZIGLER (1963) and re-emphasized recently by RISLEY & WOLF (1973, HOYER (1974) and others, the experimental approach to problems of developmental psychology should be considered seriously. This will enable us to distinguish more precisely between causes and effects and will tell us more about the factors producing change instead of those merely correlated with change. Since developmental psychologists, however, often lack full control over experimental conditions, quasi-experimental designs should be applied more frequently as proposed by CAMPBELL & STANLEY (1963). Time-sequential studies, for example, would show whether or not an intervention program produced a developmental change. In case utilization of experimental and quasi-experimental strategies is limited or non-experimental designs are preferred because of their heuristic value in theory-construction, the identification of causal relationships should still be stressed according to methodological models such as proposed by BLALOCK (1964) and COLEMAN (1971) among others. Their appropriateness for the investigation of developmental processes is given especially because of the conceptual distinction between direct vs. intermediate causal relationships or between external vs. internal causes of change respectively. We need explanatory studies which under a life-span perspective do not only have to identify temporarily proximal but also temporarily distal causes of intra-individual change and which will provide more information about the "When" and "How" of intervention in developmental processes.

Aside from this we also need to know more about the applicability of group-data to single cases. In order to avoid what

HOYER (1974, p. 824) has called the "paradox of 'discovering' laws of behavioral development that do not generalize to the individual" we should use small-N methodologies or single-subject designs more freely. When using large-group designs we should pay more attention to those subjects being represented inappropriately by the group-data obtained and identify the variables step by step which distinguish them from those subjects who fit the data more ideally. The systematic investigation of moderator-variables contributing to treatment-by-person interactions will bring us closer to define the best treatment for each individual.

A last problem to be mentioned here is the control of side-effects any intervention attempt might produce. To be able to handle our empirical data we always have to confine ourselves to a limited number of variables included in our design, e.g. we have to neglect the complex net of psychological variables and isolate some of them in a somewhat arbitrary way. Thus, by observing treatment-produced change in the variables under study we might overlook change in other variables not included in the design.

For example, according to BARKER's (1968) behavior setting theory an increase in social activities and responsibility produced by environmental change (which might be defined as an intervention goal) might be accompanied by a decrease in freedom of movement and autonomy (which might be defined as an unwanted side-effect). In orther words, interventions in complex "systems" (persons, institutions, environments) do have multiple effects which can only be registered by successively enlarging the number of variables under study and trying to approximate the experimental situation to the natural one. Since in the area of long-range processes like in psychological development we will never be able to include all relevant variables in any empirical design nor construe an isomorphic relationship between "experimental" and "natural" conditions we should increasingly make use of simulation experiments (see e.g., BALTES & GOULET, 1971) or computer simulation models (see e.g., HARBORDT, 1974) having been successfully applicated in other research areas so far.

Problems of research in intervention under life-span perspectives

We are concerned with late effects of preventive and optimizing intervention in childhood, effects which may under certain circumstances show up in later ages. A longitudinal tracing of the given effects would mean, however, that one has to wait for decades in order to get a final evaluation of the efficiency of the program (unless we estimate intervention effects from retrospective reports). In addition, the effects of the program might be generation-specific only. This would question its effectiveness for those generations we are then dealing with.

At this point it has to be asked which possibilities are available for any evaluation within a reasonable length of time. What we do need is a short-term estimation of long-term effects and efficiency. This can only be accomplished by a theory of development covering at least the period between intervention and criterion age. Such a theory should include variables in close temporal connection with the intervention point which may serve as early check-marks for the estimation of the long-term effects. Without a theoretical bridging of the time-gap between early intervention and late consequences one cannot exclude "sleeper-effects" but will have a long period of uncertainty with respect to their occurance instead.

The use of growth curves provides developmental psychology with one possibility to control long-term effects. Suppose an intervention program would be designed to correct individual deviations from the "ideal", an approximation to a test-section of the curve could then be viewed as an indicator for long-term success.

As early childhood intervention programs on cognitive behavior show, the estimation of long-term effects is as valid as the knowledge about conditions and determinants of the ideal developmental curve and its realisation for the group under treatment (the programs actually show that a single raise to the "normal" intelligence level is not sufficient but that support has to be given continuously).

In summary, estimations of late consequences will become increasingly more reliable (a) the higher the validity of causal hypotheses on intervention effects, (b) the greater the proportion of controlled causal factors, (c) the better the information on growth curves and change trends, (d) the more reliable the anticipation of events which may support intervention effects or interfere with them, (e) the more the side-effects are controlled.

Back to life-span theory: the lack of proof in such tentative models will often be tremendous. Without an attempt to construct developmental theories and to validate them by combining the available fragmentary information into a "developmental puzzle", modification programs concerning childhood education under life-span perspective come close to speculations, beliefs, or risk-gamblings.

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